



Customer Profile

Immediate payback for Trend

Virgin Island refinery has seventeen

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Hess Oil Corporation
St. Croix, United States Virgin Islands

HESS OIL VIRGIN ISLANDS Corporation owns and operates a large petroleum refinery in St. Croix, United States Virgin Islands. In addition to crude distillation capacity, Hess Oil also has substantial downstream processing facilities which produce various grades of gasoline, heating oil and other fuels.

A year ago, Hess installed an intrinsically-safe Trendmaster® 2000 Remote On-Line Monitoring System on their penex unit, charge pumps and motors. The penex unit is critical to the plant operation as it runs intermediate feedstocks through a reactor to improve its octane value in gasoline. The refinery is currently monitoring 103 machine points and plans to add more points later. The material being processed in

this unit is very volatile and instrumentation was needed to provide early warnings to prevent costly failures. Hess Oil had previously used hand-held data collectors which could only gather vibration data, not temperature or pressure information.

The Trendmaster® 2000 System has several advantages over walk-around programs. As all field circuitry associated with the system is powered directly from the System Computer, field power connections aren't required. In addition, the low-power design means only two safety barriers are required per cable line. That means two barriers for 64 points of data compared to many systems which require two barriers for every point. The savings are dramatic.

The Trendmaster® 2000 consists of a COMPAQ 386 Host Computer and two Hayes Ultra 96 modems for using Trendmaster® 2000 Remote Access

Software. According to Pete Kokinda, Mechanical Superintendent, Hess has had seventeen machine saves on their penex unit during the last year which can be directly attributed to the Trendmaster® 2000 System.

"Hess also wanted to monitor their equipment with an on-line system. With Trendmaster® 2000, control room operators can look at their computer screen and see exactly how a unit is operating. We save time, as operators don't need to take readings with a portable data collector. Readings can also be taken more often. We get on-line, scanning 24-hours a day, 7 days a week, 365 days a year. It's not a situation where somebody on shift forgets to take readings. We know we'll have timely and accurate readings."

The Trendmaster® 2000 features used most often are Priority List Scanning, Current Value readings and Trend and Timebase plots. Machine points

master[®] 2000 System:

machine saves in first year



HESS

that are more important or are on machines which need closer scrutiny can be added to a Priority List for more frequent scanning. The Current Value option allows them to temporarily interrupt system scanning to display a point's current value. Trend plots show daily maximum, minimum and average readings. Timebase plots display instantaneous amplitude of a signal as a function of time.

The Monitor Station Status function on the Trendmaster[®] 2000 Remote Access Software is also very beneficial. In the morning, alarm events which occurred on the on-line system during the previous 24 hours can be displayed.

The charge pumps are instrumented with Bently Nevada axial position probes. They are using Trendmaster[®] 2000 displacement TIMs to provide this information to the computer. This is data which the portable data collector wasn't picking up. This information is also provided, 7 days a week.

Pete Kokinda stated, "Trendmaster 2000 has definitely saved money. The first time it picked up information was when it showed high temperature readings on an inboard bearing of a 250 hp motor. This information was displayed on the computer and we immediately shut the motor down, dropped it off at the shop and detected the bad bearing. It cost \$300 to replace the bad bearing.

The cost would be close to \$30,000 if the motor had to be replaced."

"A few months after the Trendmaster 2000 System was installed, we picked up excessive thrust on one of our penex charge pumps. Fortunately, the problem was detected early by the Trendmaster 2000 System and the pump was brought to the shop. We determined that it had movement in the bearing. The problem was corrected at a minimum cost."

Additionally, Pete said, "It is difficult to determine how much the Trendmaster[®] 2000 has saved us per year, but it would certainly be substantial as it provides early detection of equipment problems. Repairs to an 8-stage pump can cost \$50,000 to \$60,000 and involve many hours of labor. The production losses can also be substantial."

Currently, Hess Oil is upgrading their facility to increase the refinery's ability to convert heavy gas oils and residual fuel oil into higher value gasolines. The project will also enhance the refinery's ability to produce oxygenated and reformulated gasolines to meet the requirements of the Clean Air Act.

According to Pete, "We installed Trendmaster[®] 2000 on our penex unit a year ago. I am definitely pleased so far, and, based on this experience, we are seriously considering using Trendmaster 2000 on future projects." ■



S.O.S.

Synopsis Of Saves

■ A utility company had a major save using their newly-installed Transient Data Manager[®] system. Their Vibration Specialist noticed a step change in vibration amplitude, plus a 25 degree phase shift on one of the bearing's trend files. Plant management was convinced of the need to trip the 800 MW unit to collect transient data. Resulting Polar plots showed a significant increase in first critical response compared to reference plots. The LP turbine cover was pulled; four broken blades and 20 cracks at the blade roots were found. Savings in further damage and downtime were estimated at \$2 million.

■ A Southeast Asia facility was working with an OEM and Bently Nevada to develop a long-term solution to fan problems. During normal operation, the fan's vibration and temperature values were constant. The Alert setpoints were set just above the steady state value to indicate any increase in vibration or temperature. Upon alarm, Operations personnel verified that the operating conditions were the same, after which the values were monitored constantly. Within hours, the vibration and temperature values increased significantly. Having previously rebuilt a failed fan, it was decided to shut this unit down.

Post-shutdown inspection determined that a low viscosity oil had been added to the lubrication system during routine maintenance. Subsequent maintenance checks showed the oil's overall viscosity had decreased to a point where it could not provide adequate lubrication to the bearing. ■